

REMARKS

Claims 2, 5-11, 14-18, 21, 23-26, and 29-44 are pending in this application; claims 2, 5, 9, 14, 29, 33, and 38 being independent. Claims 1, 3, 4, 12, 13, 19, 20, 22, 27, and 28 have been canceled. Claims 5-9, 11, 14, 16, 23, 24, 26, 29-33, 35, 36, 38, 39, 40, and 44 have been amended. Applicants appreciate Examiner's careful consideration of this application and allowing of claims 2, 21, 39, and 43.

The USPTO has objected to claims 5, 9, 10, 14, 15, 29, 33, 34, and 38 but indicated they will be allowed if amended to specifically recite limitations in their base claims and any intervening claims. Applicants have amended claims 5, 9, 14, 29, 33, and 38 to specifically recite features in their base claims and any intervening claims. Claims 10, 15, and 34 depend from allowed claims 9, 14, and 33, respectively. Applicants therefore request that the Examiner reconsider and withdraw the objection to claims 5, 9, 10, 14, 15, 29, 33, 34, and 38.

The USPTO has rejected claims, 23-26, 36, 37, and 44 under 35 U.S.C. §103 as being obvious over Selvakumar in view of La Fiandra. Applicants have amended claims 23, 24, 26, 36, and 44 to depend from allowed claim 29. Claim 25 depends from claim 24. Claim 37 depends from claim 36. Applicants therefore request that the Examiner reconsider and withdraw the rejection to claims 23-26, 36, 37, and 44.

The USPTO has withdrawn claims 6-8, 11, 16-18, 30-32, 35, and 40-42 from consideration as being non-elected in response to previously issued restriction and election requirements. Applicants have amended claims 6-8, 11, and 16 to depend from allowed generic claim 5, and have amended claims 30-32, 35, and 40 to depend from allowed generic claim 29. Claims 17 and 18 depend from claim 16. On the other hand, claims 41 and 42 depend from claim 40. Applicants therefore request that the Examiner rejoin and reconsider claims 6-8, 11, 16-18, 30-32, 35, and 40-42.

Summary

Claims 2, 5-11, 14-18, 21, 24-26, and 29-44 are pending in this application. The claims have been allowed by the USPTO, indicated allowable by the USPTO, or amended by Applicants to depend from an allowed base claim. Applicants therefore request that the Examiner reconsider and withdraw the outstanding objections and rejections and allow all of the pending claims.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Dr. Hrayr A. Sayadian (Reg. No. 46,491) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Appl. No. 09/049,121
Due Date: May 14th, 2001

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1, 3, 4, 12, 13, 19, 20, 22, and 28 have been canceled.

The claims have been amended as follows:

5. (Amended) A deformable mirror comprising:

a vertical electrostatic comb drive including a first array of stationary elements and a second array of moving elements correspondingly interspersed with said first array;

a reflective surface attached to said second array;

a layer covering tops of elements of said second array; and [The deformable mirror according to claim 4,]

a spring for suspending said first array relative to said second array, said spring being attached to said layer.

6. (Amended) The deformable mirror according to claim 5 [3], wherein said stationary elements and said movable elements are circular.

7. (Amended) The deformable mirror according to claim 5 [3], wherein said stationary elements and said movable elements are planar.

8. (Amended) The deformable mirror according to claim 5 [4], wherein said layer is attached directly to said reflective surface.

9. (Amended) A deformable mirror comprising:

a vertical electrostatic comb drive;

a reflective surface attached to said vertical comb drive, wherein said vertical comb drive comprises a first array of stationary elements and a second

array of moving elements correspondingly interspersed with said first array, said reflective surface being attached to said second array and defining a plane; said vertical comb drive, when actuated, displacing said surface in a direction orthogonal to the plane thereof;

a layer covering tops of elements of said second array; and

[The deformable mirror according to claim 4, further comprising]

a post attaching said layer to said reflective surface.

11. (Amended) The deformable mirror according to claim 5 [3], wherein voltage is applied to each stationary element of said first array individually or each moving element of said second array individually.

14. (Twice Amended) A deformable mirror comprising:

a vertical electrostatic comb drive including an array of vertical comb actuators, wherein said vertical comb drive includes a first array of stationary elements and a second array of moving elements correspondingly interspersed with said first array;

a reflective surface attached to said vertical comb drive, said reflective surface being attached to said second array and defining a plane, said reflective surface being displaced in a direction orthogonal thereof when said vertical comb drive is actuated; and [The deformable mirror according to claim 12, further comprising]

springs for individually suspending each of said second array of each actuator in said array.

16. (Thrice Amended) The deformable mirror according to claim 5 [1], wherein said vertical electrostatic comb drive comprises plurality of cavities and teeth interdigitally mounted with said cavities, said reflective surface being attached to said teeth.

23. (Amended) The displaceable surface of claim [22] 29 wherein the vertical electrostatic comb drive is provided on a substrate and said surface is generally parallel to said substrate.

24. (Amended) The displaceable surface of claim [22] 29 wherein said displaceable surface includes plural vertical electrostatic comb drives to which said surface is attached, each said vertical electrostatic comb drive locally displacing said surface in a direction generally orthogonal to a plane generally defined by said surface.

26. (Twice Amended) The displaceable surface of claim [22] 29 further comprising a mirror mounted substantially parallel to said surface.

29. (Amended) A displaceable surface comprising:

a vertical electrostatic comb drive;

a surface attached to said vertical comb drive, wherein said vertical comb drive comprises a first array of stationary elements and a second array of moving elements correspondingly interspersed with said first array, said surface defining a plane and being attached to said second array, said surface being displaced in a direction orthogonal thereof when said vertical electrostatic comb drive is actuated;

d. 8 a layer covering tops of elements of said second array; and

[The displaceable surface according to claim 28,] a spring for suspending said first array relative to said second array, said spring being attached to said layer.

30. (Amended) The displaceable surface according to claim [22] 29, wherein said stationary elements and said movable elements are circular.

31. (Amended) The displaceable surface according to claim [22] 29, wherein said stationary elements and said movable elements are planar.

32. (Twice Amended) The displaceable surface according to claim 29 [28], wherein said layer is attached directly to said reflective surface.

33. (Thrice Amended) A displaceable surface comprising:

a vertical electrostatic comb drive;

a surface attached to said vertical comb drive, wherein said vertical comb drive comprises a first array of stationary elements and a second array of moving elements correspondingly interspersed with said first array, said surface defining a plane and being attached to said second array, said surface being displaced in a direction orthogonal to the plane thereof when said vertical electrostatic comb drive is actuated;

a layer covering tops of elements of said second array; and

NA [The displaceable surface according to claim 28, further comprising] a post attaching said layer to said reflective surface.

35. (Amended) The displaceable surface according to claim [22] 29, wherein voltage is applied to each stationary element of said first array individually or each moving element of said second array individually.

36. (Amended) The displaceable surface according to claim [22] 29, wherein said vertical comb drive comprises an array of vertical comb actuators.

38. Amended) A displaceable surface comprising:

a vertical electrostatic comb drive including an array of vertical comb actuators;

a surface attached to said vertical comb drive, wherein said vertical comb drive comprises a first array of stationary elements and a second array of moving

elements correspondingly interspersed with said first array, said surface defining a plane and being attached to said second array, said surface being displaced in a direction orthogonal to the plane thereof when said vertical electrostatic comb drive is actuated; and

[The displaceable surface according to claim 36, further comprising] springs for individually suspending each of said second array of each actuator in said array.

39.(Twice Amended) The displaceable surface according to claim 38 [36], further comprising an anchor for supporting said springs.

40. (Twice Amended) The displaceable surface according to claim [22] 29, wherein said vertical comb drive comprises plurality of cavities and teeth interdigitally mounted with said cavities, said [reflective] surface being attached to said teeth.

44. (Amended) The displaceable surface of claim [22] 29, wherein said surface is reflective.